



Louisville Metro Air Pollution Control District
701 West Ormsby Avenue, Suite 303
Louisville, Kentucky 40203-3137



April 01, 2019

Federally Enforceable District Origin Operating Permit Statement of Basis

Source: Advance Ready Mix Concrete Inc.
Plant #3
3098 Element Lane
Louisville, KY 40299

Owner: Advance Ready Mix Concrete Inc.
161 North Shelby Street
Louisville, KY 40202

Application Documents: See Table 8 in section I
Public Comment Date: 02/26/2019
Permitting Engineer: Martin J Hazelett Permit Number: O-1300-19-F
Plant ID: 1246 SIC: 3273 NAICS: 327320

Introduction:

This permit will be issued pursuant to District Regulation 2.17- *Federally Enforceable District Origin Operating Permits*. Its purpose is to limit the plant wide potential emission rates from this source to below major source threshold levels and to provide methods of determining continued compliance with all applicable requirements.

This is a standard FEDOOP permit renewal. This action also updates the permit format and equipment lists.

Jefferson County is classified as an attainment area for lead (Pb), nitrogen dioxide (NO₂), carbon monoxide (CO), particulate matter less than 10 microns (PM₁₀), and particulate matter less than 2.5 microns (PM_{2.5}). Jefferson County is classified as a nonattainment area for ozone (O₃). This facility is located in the portion of Jefferson County that is an attainment area for sulfur dioxide (SO₂).

Permit Application Type:

- | | | |
|---|--|--|
| <input type="checkbox"/> Initial issuance | <input type="checkbox"/> Permit Revision | <input checked="" type="checkbox"/> Permit renewal |
| | <input type="checkbox"/> Administrative | |
| | <input type="checkbox"/> Minor | |
| | <input type="checkbox"/> Significant | |

Compliance Summary

- | | |
|--|---|
| <input type="checkbox"/> Compliance certification signed | <input type="checkbox"/> Compliance schedule included |
| <input type="checkbox"/> Source is out of compliance | <input checked="" type="checkbox"/> Source is operating in compliance |

I. Source Information

1. **Product Description:** Advance Ready Mix Plant - #3 is a dry-batch ready-mix concrete plant.
2. **Process Description:** The dry components of concrete (cement, fly ash (cement supplement), sand, and aggregate) are measured and loaded with water into concrete ready mix/transit trucks and transported to offsite delivery locations.
3. **Site Determination:** There are no other facilities that are contiguous or adjacent, but there are three (3) other ready mix plants under common control. The other three plants under common control are listed below:

Advance Ready Mix – Plant #1 (0579), 820 E. Water St., Louisville KY 40202

Advance Ready Mix – Plant #2 (0579), 201 Clay St., Louisville, KY 40402

Advance Ready Mix – Plant #5 (1246), 6801 Enterprise Drive, Lou., KY 40214

4. **Emission Unit Summary:**

Emission Unit	Equipment Description
U1	Ready Mix Concrete Batch Plant (Truck Mix)
IA1	Storage Tanks

5. **Fugitive Sources:** The fugitive sources were identified by the source are uncontrolled portions of the truck mix/transit ready mix concrete unit.

6. **Permit Revisions:**

Permit No.	Public Notice Date	Issue Date	Change Type	Description/Scope
27847-13-F	07/23/2013 10/11/2013	12/04/2013	Initial	Initial Permit Issuance
O-1300-19-F	02/26/2019	04/01/2019	Renewal	Permit renewal
			Admin	Updated permit format, added 4.5 MMBtu/hr direct contact water heater, and batch admixture storage totes (Insignificant activities) Deleted non-applicable Permit Shield, Off-Permit Document, and Alternative Operating Scenario references. Added controlled and uncontrolled emission factors to

Permit No.	Public Notice Date	Issue Date	Change Type	Description/Scope
				clarify how to calculate emissions

7. Construction Permit History:

Permit No.	Effective Date	Description
122-98-C	09/01/1998	One (1) concrete batch plant which includes a three-compartment material bin, one (1) cement silo, and one (1) fly ash silo.
123-98-C	09/01/1998	Two (2) baghouses used to control emissions during product transfer to one (1) cement silo and (1) fly ash silo.

8. Permit Renewal-Related Documents

Document Number	Date Received	Description
19602	07/11/2007	FEDOOP application
38892	03/23/2012	Application AP-100A change of RO
59012	09/09/2013	Application AP-100A STAR exempt
91098	03/07/2018	Certificate of Authorization/Existence
92929	07/10/2018	FEDOOP Permit renewal reminder letters
94507	09/28/2018	Application AP100A FEDOOP renewal 1300
95900	11/12/2018	Follow-up notes to Advance Ready Mix 1, 2, 3; site visit 11/07/2018
96135	11/26/2018	Follow-up notes to Advance Ready Mix 1, 2, 3; site visit 11/07/2018
96341	11/26/2018	Follow-up notes to Advance Ready Mix 1, 2, 3; site visit 11/07/2018
96249	11/27/2018	RE: Follow-up notes to the ARM site visit 11/07/2018
96455	12/07/2018	Follow-up notes to Advance Ready Mix 1, 2, 3; site visit 11/07/2018
96541	12/18/2018	Notice OF Deficiency action required by JANUARY 17 2019
96659	01/07/2019	RE Follow-up notes to Advance Ready Mix 1, 2, 3; site visit 11/07/2018

Document Number	Date Received	Description
96672	01/08/2019	RE Follow-up notes to Advance Ready Mix 1, 2, 3; site visit 11/07/2018
96730	01/10/2019	RE Follow-up notes to Advance Ready Mix 1, 2, 3; site visit 11/07/2018
96740	01/14.2019	RE Follow-up notes to Advance Ready Mix 1, 2, 3; site visit 11/07/2018

9. Emission Summary:

Pollutant	District Calculated Actual Emissions (ton/yr) 2008 Data	Pollutant that triggered Major Source Status (based on PTE)
CO	0	No
NO _x	0	No
SO ₂	0	No
PM ₁₀	7.878	Yes
VOC	0	No
Total HAPs	0.000777	No
Single HAP	0	No

10. Applicable Requirements

- | | | |
|------------------------------------|---|------------------------------------|
| <input type="checkbox"/> 40 CFR 60 | <input checked="" type="checkbox"/> SIP | <input type="checkbox"/> 40 CFR 63 |
| <input type="checkbox"/> 40 CFR 61 | <input checked="" type="checkbox"/> District Origin | <input type="checkbox"/> Other |

11. Referenced MACT Federal Regulations: There are no MACT federal regulations for this source.

12. Referenced non-MACT Federal Regulations: There are no non-MACT federal regulations for this source.

II. Regulatory Analysis

1. Acid Rain Requirements: Advance Ready Mix is not subject to the Acid Rain Program.

2. **Stratospheric Ozone Protection Requirements:** Title VI of the CAAA regulates ozone depleting substances and requires a phase-out of their use. This rule applies to any facility that manufactures, sells, distributes, or otherwise uses any of the listed chemicals. Advance Ready Mix – Plant #5 does not manufacture, sell, or distribute any of the listed chemicals. The source’s use of listed chemicals is that in fire extinguishers, chillers, air conditioners and other HVAC equipment.
3. **Prevention of Accidental Releases 112(r):** Advance Ready Mix - Plant #3 does not manufacture, process, use, store, or otherwise handle one or more of the regulated substances listed in 40 CFR Part 68, Subpart F, and District Regulation 5.15, *Chemical Accident Prevention Provisions*, in a quantity in excess of the corresponding specified threshold amount.
4. **Basis of Regulation Applicability**

- a. **Plantwide**

Advance Ready Mix - Plant #3 is a potentially major source for the pollutant PM₁₀. Regulation 2.17 – *Federally Enforceable District Origin Operating Permits* establishes requirements to limit the plant wide potential emission rates to below major source threshold levels and to provide methods of determining continued compliance with all applicable requirements.

Advance Ready Mix – Plant #3 requested the plantwide emission limits of the criteria pollutant PM₁₀ < 25 ton/yr to be FEDOOP STAR Exempt as defined by Regulation 5.00, section 1.13.5.

Regulations 5.00, 5.01, 5.20, 5.21, 5.22, and 5.23 (STAR Program) establishes requirements for environmental acceptability of toxic air contaminants (TACs) and the requirement to comply with all applicable emission standards. Advance Ready Mix – Plant #3 took the total plantwide limits of 25 tpy for criteria pollutants to be a FEDOOP STAR Exempt source.

Regulation 2.17, section 5.2, requires monitoring and record keeping, to assure ongoing compliance with the terms and conditions of the permit. The owner or operator shall maintain all the required records for a minimum of 5 years and make the records readily available to the district upon request.

Regulation 2.17, section 7.2, requires stationary sources for which a FEDOOP is issued to submit an Annual Compliance Certification by April 15, of the following calendar year. In addition, as required by Regulation 2.17, section 5.2, the source shall submit an Annual Compliance Report to show compliance with the permit, by March 1 of the following calendar year. Compliance reports and compliance certifications shall be signed by a responsible official and shall include a certification statement per Regulation 2.17, section 3.5.

b. **Emission Unit U1 – Ready Mix Concrete Batch Plant**

i. **Equipment:**

Emission Point	Description	Applicable Regulation	Basis for Applicability
E1	Cement silo, McNeilus model 12-366 (capacity: 150 tons/hr)	7.08	Regulation 1.14 establishes the requirements for the control of fugitive particulate emissions for any source.
E2	Fly ash silo, McNeilus model 12-366 (capacity: 125 tons/hr)		
E3	Aggregate/sand weigh hopper [batcher] McNeilus model 12-366(capacity: 231 ton/hr -single compartment)		
E4	Cement/Fly ash weigh hopper [batcher] McNeilus model 12-366 (capacity: 50 ton/hr)		
E5	Truck Loadout McNeilus model 12-366 (capacity: 281 ton/hr)		
E6	Aggregate stockpiles/handling [delivery to ground storage pile]	1.14, 7.08	Regulation 7.08 establishes the requirements for PM emission from new processes that commences construction after September 1, 1976
E7	Sand stockpiles/handling [delivery to ground storage pile]		
E8	Aggregate/sand handling [front loader pile to conveyor fill hopper] McNeilus model 12-366 (capacity: 231 ton/hr)	7.08	
E9	Aggregate/sand batch transfer conveyor [to truck loadout] McNeilus model 12-366 (capacity: 230 ton/hr)		
E10	Aggregate/Sand bins McNeilus model 12-366(capacity: 231 ton/hr)		
E11	Unpaved Roads & Yard Areas	1.14	

Emission Point	Description	Applicable Regulation	Basis for Applicability
E12	Aggregate/sand bin loading conveyor [exterior] (capacity: 231 ton/hr)	7.08	
E13	Aggregate/sand bin loading conveyor fill hopper [exterior] (capacity: 231 ton/hr)		

ii. **Standards/Operating Limits**

1) **Opacity**

- (a) Regulation 1.14, section 2.3 establishes standards for opacity.
- (b) Regulation 7.08, section 3.1.1 establishes an opacity standard of less than 20%, for processes that commenced construction after September 1, 1976

2) **PM/PM₁₀**

- (a) Regulation 1.14, section 2.1 establishes work practice standards to prevent particulate matter from becoming airborne beyond the work site.
- (b) The emission standard for PM at each emission point with a process throughput of greater than 30 ton/hr is determined in accordance with Regulation 7.08, section 3.1.2 as follows:

$$\text{PM lb/hr limit} = 17.31 (\text{process weight ton/hr})^{0.16}.$$

III. Other Requirements

1. **Temporary Sources:** The source did not request to operate any temporary facilities.
2. **Short Term Activities:** The source did not report any short term activities.
3. **Emissions Trading:** N/A
4. **Alternative Operating Scenarios:** The source did not request any alternative operating scenarios.
5. **Compliance History:** There were no notices of violation issued to this facility.

6. Calculation Methodology or Other Approved Method:

The owner or operator shall calculate emissions using emission factors and equations in this attachment unless other methods are approved in writing by the District.

Emission Unit U1: Ready Mix Concrete Batch Plant (Truck Mix)

The tables supplied throughout the calculation methodology, list AP-42 emission factors, and those factors converted to lb pollutant/yd³ concrete. This is an example calculation as follows for E1 whose emission factors are based on ton cement, converting the AP-42 emission factor to PM₁₀/yd³ concrete.

$$(\text{EF lb PM}_{10}/\text{ton cement}) * (\text{ton cement}/\text{yd}^3 \text{ concrete}) = (\text{lb PM}_{10}/\text{yd}^3 \text{ concrete})$$

$$(0.47 \text{ lb PM}_{10}/\text{ton cement}) * (0.2455 \text{ ton cement}/\text{yd}^3 \text{ concrete}) = (0.1154 \text{ lb PM}_{10}/\text{yd}^3 \text{ concrete})$$

Emission Factor conversion to ton composite/yd³ concrete

Concrete composition:	lbs composite/ yd ³ concrete	ton composite/ yd ³ concrete
Density	4024	2.012
Aggregate	1865	0.933
Sand	1428	0.714
Cement+Sup.	564	0.282
Water	167	0.083
Total	4024	2.012
lb cement	491	0.2455
cement Supplement (fly ash)	73	lbs/yard

Emission Factors for Cement silo filling U1 [E1]

Criteria Pollutant	Uncontrolled			Controlled ¹		
	AP-42 Emission Factor (lb/ton cement)	AP-42 EF converted (lb/yd ³ concrete) ²	EF Source	AP-42 Emission Factor (lb/ton cement)	AP-42 EF converted (lb/yd ³ concrete) ²	EF Source
PM	0.73	0.1792	AP-42, 11.12-2	0.00099	0.0002	AP-42, 11.12-2
PM ₁₀	0.47	0.1154	AP-42, 11.12-2	0.00034	8.35E-05	AP-42, 11.12-2
PM _{2.5} ³	0.47	0.1154	See footnote 3	0.00034	8.35E-05	See footnote 3
Arsenic	1.68E-06	4.12E-07	AP-42, 11.12-8	4.24E-09	1.04E-09	AP-42, 11.12-8
Beryllium	1.79E-08	4.39E-09	AP-42, 11.12-8	4.86E-10	1.19E-10	AP-42, 11.12-8
Cadmium	2.34E-07	5.74E-08	AP-42, 11.12-8	4.68E-09	5.74E-08	AP-42, 11.12-8

1 The controlled emission factors for Cadmium and total Phosphorus were calculated using the District default baghouse efficiency of 98%; controlled EF = (uncontrolled EF) * (1-0.98)

2 AP-42 Emission Factors are converted to (lb pollutant/yd³ concrete) for ease in calculation.

3 In the absence of a determined PM_{2.5} emission factor, the District assumes the PM_{2.5} emission factor equals PM₁₀

	Uncontrolled			Controlled ¹		
Criteria Pollutant	AP-42 Emission Factor (lb/ton cement)	AP-42 EF converted (lb/yd ³ concrete) ²	EF Source	AP-42 Emission Factor (lb/ton cement)	AP-42 EF converted (lb/yd ³ concrete) ²	EF Source
Total Chromium	2.52E-07	6.19E-08	AP-42, 11.12-8	2.90E-08	7.12E-09	AP-42, 11.12-8
Lead	7.36E-07	1.81E-07	AP-42, 11.12-8	1.09E-07	2.68E-08	AP-42, 11.12-8
Manganese	2.02E-04	4.96E-05	AP-42, 11.12-8	1.17E-07	2.87E-08	AP-42, 11.12-8
Nickel	1.76E-05	4.32E-06	AP-42, 11.12-8	4.18E-08	1.03E-08	AP-42, 11.12-8
Total Phosphorus	1.18E-05	2.90E-06	AP-42, 11.12-8	2.36E-07	2.90E-06	AP-42, 11.12-8

Emission Factors for Fly ash silo filling U1 [E2]

	Uncontrolled ⁴			Controlled		
Criteria Pollutant	AP-42 Emission Factor (lb/ton fly ash)	AP-42 EF converted (lb/yd ³ concrete)	EF Source	AP-42 Emission Factor (lb/ton fly ash)	AP-42 EF converted (lb/yd ³ concrete)	EF Source
PM	3.14	0.1146	AP-42, 11.12-2	0.0089	0.0003	AP-42, 11.12-2
PM10	1.1	0.0402	AP-42, 11.12-2	0.0049	1.79E-04	AP-42, 11.12-2
PM2.5 ⁵	1.1	0.0402	See footnote 5	0.0049	1.79E-04	See footnote 5
Arsenic	5.00E-05	1.83E-06	AP-42, 11.12-8	1.00E-06	3.65E-08	AP-42, 11.12-8
Beryllium	4.52E-06	1.65E-07	AP-42, 11.12-8	9.04E-08	3.30E-09	AP-42, 11.12-8
Cadmium	9.90E-09	3.61E-10	AP-42, 11.12-8	1.98E-10	7.23E-12	AP-42, 11.12-8
Total Chromium	6.10E-05	2.23E-06	AP-42, 11.12-8	1.22E-06	4.45E-08	AP-42, 11.12-8
Lead	2.60E-05	9.49E-07	AP-42, 11.12-8	5.20E-07	1.90E-08	AP-42, 11.12-8
Manganese	1.28E-05	4.67E-07	AP-42, 11.12-8	2.56E-07	9.34E-09	AP-42, 11.12-8
Nickel	1.14E-04	4.16E-06	AP-42, 11.12-8	2.28E-06	8.32E-08	AP-42, 11.12-8
Total Phosphorus	1.77E-04	6.46E-06	AP-42, 11.12-8	3.54E-06	1.29E-07	AP-42, 11.12-8
Selenium	3.62E-06	1.32E-07	AP-42, 11.12-8	7.24E-08	2.64E-09	AP-42, 11.12-8

E1 lb pollutant = (ton cement) * E1 EF (lb pollutant/ton cement)

E1 lb pollutant = (concrete yds³) * E1 EF (lb pollutant/concrete yds³)

E2 lb pollutant = (ton fly ash) * E2 EF (lb pollutant/ton fly ash)

E2 lb pollutant = (concrete yds³) * E2 EF (lb pollutant/concrete yds³)

Emission Factors for U1 [E3, E6, E7, E8, E9, E10, E12, E13]

4 The ND uncontrolled emission factors for fly ash silo filling (E2) were calculated using the District default baghouse efficiency of 98%; uncontrolled EF = (controlled EF)/(1-0.98)

5 In the absence of a determined PM_{2.5} emission factor, the District assumes the PM_{2.5} emission factor equals PM₁₀

Criteria Pollutant	PM Uncontrolled		PM ₁₀ Uncontrolled		EF Source
	AP-42 Emission Factor (lb PM/ton material)	AP-42 EF converted (lb PM/yd ³ concrete)	AP-42 Emission Factor (lb PM ₁₀ /ton material) ¹	AP-42 EF converted (lb PM ₁₀ /yd ³ concrete)	
Weigh hopper (E3)	0.0048	0.0079	0.00280	0.0046	AP-42, 11.12-2
Aggregate transfer (E6, E8, E9, E10, E12, E13)	0.0069	0.0064	0.00330	0.0031	AP-42, 11.12-2
Sand transfer (E7, E8, E9, E10, E12, E13)	0.0021	0.0015	0.00099	0.0007	AP-42, 11.12-2

PM and PM₁₀ per ton material defined as follows per AP-42:

Weigh hopper material = (sand + aggregate) in tons

Aggregate transfer = aggregate in tons

Sand transfer = sand in tons

Example calculation for U1:

E3 lb pollutant = (ton material) * EF (lb PM/ton material)

E3 lb pollutant/yr = (concrete yds³/yr) * EF (lb pollutant/concrete yds³)

E6 Aggregate (SCC 3-05-011-21) Delivery to ground storage (stockpile); stockpile erosion is a separate calculation

E7 Sand (SCC 3-05-011-22) Delivery to ground storage (stockpile); stockpile erosion is a separate calculation

E8 Aggregate (SCC 3-05-011-21) and Sand (SCC 3-05-011-22) from ground storage to A/S bin loading conveyor fill hopper

E8 lb pollutant/yr = 2*[(ton sand/yr) * EF (lb pollutant/ton sand) + (ton aggregate/yr) * EF (lb pollutant/ton aggregate)]

E8 lb pollutant/yr = 2*[(concrete yds³/yr) * EF Sand Transfer (lb pollutant/concrete yds³) + (concrete yds³/yr) * EF Aggregate Transfer (lb pollutant/concrete yds³)]

E9 Aggregate/sand transfer conveyor (Weigh hopper conveyor to truck load out)

E9 lb pollutant/yr = [(ton sand/yr) * EF (lb pollutant/ton sand) + (ton aggregate/yr) * EF (lb pollutant/ton aggregate)]

E9 lb pollutant/yr = (concrete yds³/yr) * EF Sand Transfer (lb pollutant/concrete yds³) + (concrete yds³/yr) * EF Aggregate Transfer (lb pollutant/concrete yds³)

E10 A/S transfer to weigh hopper

E10 lb pollutant/yr = [(ton sand/yr) * EF (lb pollutant/ton sand) + (ton aggregate/yr) * EF (lb pollutant/ton aggregate)]

E10 lb pollutant/yr = (concrete yds³/yr) * EF Sand Transfer (lb pollutant/concrete yds³) + (concrete yds³/yr) * EF Aggregate Transfer (lb pollutant/concrete yds³)

E12 Aggregate (SCC 3-05-011-04) Transfer to elevated storage

E12 Sand (SCC 3-05-011-05) Transfer to elevated storage

E12 lb pollutant/yr = [(ton sand/yr) * EF (lb pollutant/ton sand) + (ton aggregate/yr) * EF (lb pollutant/ton aggregate)]

$E12 \text{ lb pollutant/yr} = (\text{concrete yds}^3/\text{yr}) * EF \text{ Sand Transfer (lb pollutant/concrete yds}^3) + (\text{concrete yds}^3/\text{yr}) * EF \text{ Aggregate Transfer (lb pollutant/concrete yds}^3)$

E13 Aggregate (SCC 3-05-011-23) Transfer to conveyor via fill hopper

E13 Sand (SCC 3-05-011-24) Transfer to conveyor via fill hopper

$E13 \text{ lb pollutant/yr} = [(\text{ton sand/yr}) * EF \text{ (lb pollutant/ton sand)} + (\text{ton aggregate/yr}) * EF \text{ (lb pollutant/ton aggregate)}]$

$E13 \text{ lb pollutant/yr} = (\text{concrete yds}^3/\text{yr}) * EF \text{ Sand Transfer (lb pollutant/concrete yds}^3) + (\text{concrete yds}^3/\text{yr}) * EF \text{ Aggregate Transfer (lb pollutant/concrete yds}^3)$

U1 [E4]: Cement/Fly ash weigh hopper [batcher]⁶

Criteria Pollutant	Uncontrolled		Controlled		EF Source
	AP-42 Emission Factor (lb pollutant/ton cement + supplement)	AP-42 EF converted (lb pollutant/yd ³ concrete)	AP-42 Emission Factor (lb pollutant/ton cement + supplement)	AP-42 EF converted (lb pollutant/yd ³ concrete)	
PM	1.118	0.3153	0.098	0.0276	AP-42, 11.12-2
PM10	0.31	0.0874	0.0263	0.0074	AP-42, 11.12-2
PM2.5 ⁷	0.31	0.0874	0.0263	0.0074	See footnote 7
Arsenic	1.22E-05	3.44E-06	6.02E-07	1.70E-07	AP-42, 11.12-8
Beryllium	2.44E-07	6.88E-08	1.04E-07	2.93E-08	AP-42, 11.12-8
Cadmium	3.42E-08	9.64E-09	9.06E-09	2.55E-09	AP-42, 11.12-8
Total Chromium	1.14E-05	3.21E-06	4.10E-06	1.16E-06	AP-42, 11.12-8
Lead	3.62E-06	1.02E-06	1.53E-06	4.31E-07	AP-42, 11.12-8
Manganese	6.12E-05	1.73E-05	2.08E-05	5.87E-06	AP-42, 11.12-8
Nickel	1.19E-05	3.36E-06	4.78E-06	1.35E-06	AP-42, 11.12-8
Total Phosphorus	3.84E-05	1.08E-05	1.23E-05	3.47E-06	AP-42, 11.12-8
Selenium	2.62E-06	7.39E-07	1.13E-07	3.19E-08	AP-42, 11.12-8

$E4 \text{ lb pollutant/yr} = (\text{ton cement} + \text{supplement})/\text{yr} * EF \text{ (lb pollutant/ton cement} + \text{supplement)}$

$E4 \text{ lb pollutant/yr} = (\text{concrete yds}^3/\text{yr}) * EF \text{ (lb pollutant/concrete yds}^3)$

⁶ Without specified emission factors for cement/fly ash weigh hopper [batcher], the truck loadout (truck mix) emission factors are applied.

⁷ In the absence of a determined PM_{2.5} emission factor, the District assumes the PM_{2.5} emission factor equals PM₁₀

U1 [E5]: Truck loading (truck mix) (SCC 3-05-011-10)

Criteria Pollutant	Uncontrolled		Controlled		EF Source
	AP-42 Emission Factor (lb pollutant/ton cement + supplement)	AP-42 EF converted (lb pollutant/yd ³ concrete)	AP-42 Emission Factor (lb pollutant/ton cement + supplement)	AP-42 EF converted (lb pollutant/yd ³ concrete)	
PM	1.118	0.3153	0.098	0.0276	AP-42, 11.12-2
PM10	0.31	0.0874	0.0263	0.0074	AP-42, 11.12-2
PM2.5 8	0.31	0.0874	0.0263	0.0074	See footnote 14
Arsenic	1.22E-05	3.44E-06	6.02E-07	1.70E-07	AP-42, 11.12-8
Beryllium	2.44E-07	6.88E-08	1.04E-07	2.93E-08	AP-42, 11.12-8
Cadmium	3.42E-08	9.64E-09	9.06E-09	2.55E-09	AP-42, 11.12-8
Total Chromium	1.14E-05	3.21E-06	4.10E-06	1.16E-06	AP-42, 11.12-8
Lead	3.62E-06	1.02E-06	1.53E-06	4.31E-07	AP-42, 11.12-8
Manganese	6.12E-05	1.73E-05	2.08E-05	5.87E-06	AP-42, 11.12-8
Nickel	1.19E-05	3.36E-06	4.78E-06	1.35E-06	AP-42, 11.12-8
Total Phosphorus	3.84E-05	1.08E-05	1.23E-05	3.47E-06	AP-42, 11.12-8
Selenium	2.62E-06	7.39E-07	1.13E-07	3.19E-08	AP-42, 11.12-8

$\text{E5 lb pollutant/yr} = (\text{ton cement} + \text{supplement})/\text{yr} * \text{EF (lb pollutant/ton cement} + \text{supplement)}$
 $\text{E5 lb pollutant/yr} = (\text{concrete yds}^3/\text{yr}) * \text{EF (lb pollutant/concrete yds}^3)$

IA [E16]: Water Heater Emission Factors

Emission Source	Pollutant	Natural Gas Emission Factor (lb/10 ⁶ scf natural gas combusted)		Emission Factor Source
		Uncontrolled	Controlled	
E16	NO _x	100	100	AP-42, 1.4-1
	CO	84	84	AP-42, 1.4-1
	PM	0.52	0.52	Roy Huntley, EPA9
	PM ₁₀	.032	0.32	Roy Huntley, EPA9
	SO ₂	0.6	0.6	AP-42, 1.4-2
	VOC	5.5	5.5	AP-42, 1.4-2
	NH ₃	3.2	3.2	EPA WebFIRE

8 In the absence of a determined PM_{2.5} emission factor, the District assumes the PM_{2.5} emission factor equals PM₁₀

9 The revised PM emission factors are from: "EPA's Emission Inventory and Analysis Group guidance 3/30/2012".

$$E = (X) * (EF \text{ lb}/10^6 \text{ scf}) * (1 \text{ ton}/2000 \text{ lb.})$$

Where: E = emissions (tons)

X = the amount of natural gas combusted (10^6 scf)

[AP-42 EF (lb/MMBtu) converted to (lb/ 10^6 scf) natural gas combusted]

IA [E16]: Water Heater Emission Factors

Emission Source	Individual HAP/TAC	CAS	Natural Gas Emission Factor (lb/ 10^6 scf natural gas combusted)		Emission Factor Source
			Uncontrolled	Controlled	
E16	2-Methylnaphthalene	91-57-6	2.40E-05	2.40E-05	AP-42, 1.4-3
	3-Methylchloranthrene	56-49-5	1.80E-06	1.80E-06	AP-42, 1.4-3
	DMBA	57-97-6	1.60E-05	1.60E-05	AP-42, 1.4-3
	Acenaphthene	83-32-9	1.80E-06	1.80E-06	AP-42, 1.4-3
	Acenaphthylene	208-96-8	1.80E-06	1.80E-06	AP-42, 1.4-3
	Anthracene	120-12-7	2.40E-06	2.40E-06	AP-42, 1.4-3
	Benz(a)anthracene	56-55-3	1.80E-06	1.80E-06	AP-42, 1.4-3
	Benzene	71-43-2	2.10E-03	2.10E-03	AP-42, 1.4-3
	Benzo(a)pyrene	50-32-8	1.20E-06	1.20E-06	AP-42, 1.4-3
	Benzo(b)fluoranthene	205-99-2	1.80E-06	1.80E-06	AP-42, 1.4-3
	Benzo(g,h,i)perylene	191-24-2	1.20E-06	1.20E-06	AP-42, 1.4-3
	Benzo(k)fluoranthene	205-82-3	1.80E-06	1.80E-06	AP-42, 1.4-3
	Chrysene	218-01-9	1.80E-06	1.80E-06	AP-42, 1.4-3
	Dibenzo(a,h)anthracene	53-70-3	1.20E-06	1.20E-06	AP-42, 1.4-3
	Dichlorobenzene	25321-22-6	1.20E-03	1.20E-03	AP-42, 1.4-3
	Fluoranthene	206-44-0	3.00E-06	3.00E-06	AP-42, 1.4-3
	Fluorene	86-73-7	2.80E-06	2.80E-06	AP-42, 1.4-3
	Formaldehyde	50-00-0	7.50E-02	7.50E-02	AP-42, 1.4-3
	Hexane	110-54-3	1.80E+00	1.80E+00	AP-42, 1.4-3
	Indeno(1,2,3-cd)pyrene	193-39-5	1.80E-06	1.80E-06	AP-42, 1.4-3
	Naphthalene	91-20-3	6.10E-04	6.10E-04	AP-42, 1.4-3
	Phenanthrene	85-01-8	1.70E-05	1.70E-05	AP-42, 1.4-3
	Pyrene	129-00-0	5.00E-06	5.00E-06	AP-42, 1.4-3
	Toluene	108-88-3	3.40E-03	3.40E-03	AP-42, 1.4-3
	Arsenic	7440-38-2	2.00E-04	2.00E-04	AP-42, 1.4-4
	Beryllium	7440-41-7	1.20E-05	1.20E-05	AP-42, 1.4-4
	Cadmium	7440-43-9	1.10E-03	1.10E-03	AP-42, 1.4-4
	Chromium	7440-47-3	1.40E-03	1.40E-03	AP-42, 1.4-4
	Cobalt	7440-48-4	8.40E-05	8.40E-05	AP-42, 1.4-4
	Manganese	7439-96-5	3.80E-04	3.80E-04	AP-42, 1.4-4
	Mercury	7439-97-6	2.60E-04	2.60E-04	AP-42, 1.4-4
	Nickel	7440-02-0	2.10E-03	2.10E-03	AP-42, 1.4-4

Emission Source	Individual HAP/TAC	CAS	Natural Gas Emission Factor (lb/10 ⁶ scf natural gas combusted)		Emission Factor Source
			Uncontrolled	Controlled	
	Selenium	7782-49-2	2.40E-05	2.40E-05	AP-42, 1.4-4

$$E_{(HAP)} = (X) (EF \text{ lb}/10^6 \text{ scf}) (1 \text{ ton}/2000 \text{ lb.})$$

Where: $E_{(HAP)}$ = emissions (tons)

X = the amount of natural gas combusted (10⁶ scf)

[AP-42 EF (lb/MMBtu) converted to (lb/10⁶ scf) natural gas combusted]

IA1 [E14]; IA [E15]: Emission Factors for Tank and totes

Emission Source	Pollutant	Emission Factor (lb/gallon)	Emission Factor Source
E14 Admixture totes: No more than 7 totes, with a maximum of 2500 gallons.	VOC	N/A	Emissions accounted for in the working losses for the storage tanks below using AP-42 evaporative losses.
E15 Diesel Storage tank 4,000 gallons	VOC	N/A	Emissions accounted for in the working losses for the storage tanks below using AP-42 evaporative losses.

7. Insignificant Activities

Equipment	Quantity	PTE (tpy)	Basis for Exemption
E15 Diesel Storage tank (4,000 gal)	1	0.000545	Regulation 1.02, Appendix A
E16 Ludell DCWH4 500G, natural gas, direct contact water heater, 4.5 MMBtu/hr	1	1.93 NO _x 0.01 SO ₂	Regulation 1.02
E14-A Chemical Admixtures totes Master Glenium 7511 (850 gallons)	1	0.000245 VOC	Regulation 1.02
E14-B Chemical admixture tote Master Pozzoloth 700N (850 gallons)	1		
E14-C Chemical admixture tote Master Air AE 200 (500 gallons)	1		
E14-D Chemical admixture tote Master Set Delvo (500 gallons)	1		
E14-E Chemical admixture tote Master Matrix VMA 362 (250 gallons)	1		
E14-F Chemical admixture tote Master Set HE 122 (2500 gallons)	1		
E14-G Chemical admixture tote Master Set NC 534 (2000 gallons)	1		
550 gal tanks for storage of lubricating oils or fuel oils, with vapor pressure less than 10 mm of Hg at conditions of 26°C and 760 mm Hg	2	0.00073 VOC	Reg. 1.02, Appendix A

- 1) Insignificant activities identified in District Regulation 1.02, Appendix A, may be subject to size or production rate disclosure requirements.
- 2) Insignificant activities identified in District Regulation 1.02, Appendix A shall comply with generally applicable requirements.
- 3) The owner or operator shall annually submit an updated list of insignificant activities that occurred during the preceding year, with the compliance certification due April 15th.
- 4) Emissions from Insignificant Activities shall be reported in conjunction with the reporting of annual emissions of the facility as required by the District.
- 5) The owner or operator may elect to monitor actual throughputs for each of the insignificant activities and calculate actual annual emissions or use Potential to Emit (PTE) as the annual emissions for each piece of equipment.

- 6) The District has determined that no monitoring, record keeping, or reporting requirements apply to the insignificant activities listed, except for the equipment that has an applicable regulation and permitted under an insignificant activity (IA) unit.

Equipment Not Regulated

Emission Point	Description
E15	Diesel Storage Tank (4,000 gal)
E16	Ludell DCWH4 500G, natural gas, direct contact water heater, 4.5 MMBtu/hr

8. Basis of Regulation Applicability for IA units

a. Emission Unit IA1 – Storage Tanks

i. Equipment

Emission Point	Description	Applicable Regulation	Basis for Applicability
E14-A	Chemical admixture tote Master Glenium 7511 (850 gallons)	7.12	Regulation 7.12 establishes the requirements for new storage vessels for VOC compounds that commenced construction or modification on or after April 19, 1972
E14-B	Chemical admixture tote Master Pozzoloth 700N (850 gallons)		
E14-C	Chemical admixture tote Master Air AE 200 (500 gallons)		
E14-D	Chemical admixture tote Master Set Delvo (500 gallons)		
E14-E	Chemical admixture tote Master Matrix VMA 362 (362 gallons)		
E14-F	Chemical admixture tote Master Set AC 122 (2500 gallons)		
E14-G	Chemical admixture tote Master Set AC 534 (2500 gallons)		

ii. Standards/Operating Limits

1) VOC

- (a) Regulation 7.12, section 3.3 establishes equipment standards for VOC storage vessels